University of Zurich[UZH]

Zurich Open Repository and Archive
University of Zurich
University Library
Strickhofstrasse 39
CH-8057 Zurich
www.zora.uzh.ch

Year: 2011

Quantitative and Qualitative Rankings of Scholars

Frey, Bruno S ; Rost, Katja

Posted at the Zurich Open Repository and Archive, University of Zurich
ZORA URL: https://doi.org/10.5167/uzh-55840
Journal Article
Accepted Version

Originally published at:
Frey, Bruno S; Rost, Katja (2011). Quantitative and Qualitative Rankings of Scholars. Schmalenbach Business Review (sbr), 63(1):61-89.

Quantitative and Qualitative Rankings of Scholars

Katja Rost*, Bruno S. Frey**

* University of Zurich, Institute for Organization and Administrative Science, Universitätsstrasse 84, CH-8006 Zurich, Switzerland, Tel. +41 44 634 29 17, Fax +41 44 634 49 42

** University of Zurich, Institute for Empirical Research in Economics, Winterthurerstrasse 30, CH-8006 Zurich, Switzerland, Tel. +41 44 634 37 31, Fax +41 44 634 35 99, and CREMA – Center for Research in Economics, Management and the Arts, Switzerland

Abstract

Publication or citation rankings have become the principal indicators of the scientific worth of universities and countries, and determine to a large extent the career of individual scholars. We argue that such rankings do not effectively measure research quality, which should in fact be the essence of evaluation. For that reason, an alternative ranking is developed based on membership on academic editorial boards of professional journals. This ranking considers the reputation and recognition of scholars among their peers and their contributions to the research community in terms of reading and reviewing the work of others. We compare the results of both measurements by using a sample of 5,794 international top-management scholars. It turns out that publication rankings are not linear but related to board membership in an inverted U-shape. The finding suggests that maximizing publications disregards other essential aspects of research quality that are doubtlessly hard to measure. It follows that, if career decisions are only based on high scores in publication rankings, the result will be haphazard.

This article does not propagate as the gold standard a ranking based on board membership, but rather wants to call attention to the significant shortcomings of publication and citation rankings. They disregard important scholarly contributions, e.g. the investment in multiple and/or difficult tasks, which, nonetheless, are important for research quality. In the long run quantitative research rankings therefore may crowd out such contributions and thus worsen instead of improve, research quality.

Keywords: Rankings, Evaluations, Universities, Scholars, Research Quality

JEL Classification: H43, L15, O38

The authors are grateful for the helpful comments of three reviewers and of Margit Osterloh.

1. Introduction

Rankings in terms of the number of publications and citations are today a popular method of examining and mapping the intellectual impact of scientists, projects, journals, disciplines, faculties, universities and nations [Garfield (1979); Borgman (1990); Moed (2005); Judge et al. (2007); Meho (2007); Cronin and Meho (2008); Fabel et al. (2008); Handelsblatt (2009)]. The method has been used increasingly worldwide for policymaking, to monitor scientific developments, as well as a basis for promotions, tenure, hiring, salary, and grants decisions [Cronin (1996); White and McCain (1998); Small (1999); Warner (2000); Borgman and Furner (2002); Weingart (2005)].

Rankings are *quantitative*; they indicate the position or rather the significance of a scholar, university or country relative to others. However, it is *quality* that should be considered the essence of scientific research rankings [e.g. Johnes (1988)]: for the benefit of society it does not much matter how many publications have been authored, and how many citations have been accumulated. What should matter are the advancement of new insights and their value [Adler and Harzing (2009)], i.e. whether the research is useful, satisfies stated or implied needs, is free of deficiencies, and meets more general, social requirements [see e.g. Reedijk (1998); Nightingale and Scott (2007)]. Efforts have been made to include quality aspects in rankings, for example by counting only those publications and citations which appear in scientific journals of "acceptable" quality or by considering "impact" factors which take into account the ranking of a journal in which a publication or citation appears. Nevertheless, the resulting rankings take the quality aspects of research activity into account to a limited extent only. For simplicity, in the following the rankings based on publications and citations will be called *"quantitative"*. They will be compared to what will be called *"qualitative"* rankings based on membership in the scientific boards of academic journals, which consider the reputation and recognition of scholars among their peers. Scholarly reputation depends on a great many factors, but the qualitative aspect is certainly central[1].

This paper argues that the current bibliometric rankings, based on the number of *publications* and *citations,* should be looked at much more critically than is the rule

[1] Quantitative and qualitative rankings are not strictly separable as both contain elements of the other. The distinction is solely made for reasons of simplicity.

today. Publication and citation rankings[2] have become the major, and sometimes even the only, indicator of the scientific worth of universities and countries, and determine to a large extent the careers of individual scholars. Whether a person gets a position as an assistant professor at a university, whether he or she attains tenure and is promoted to full professor, or whether he or she receives research funding, depends to a large extent on their publication and citation record, as published in the various rankings. We show that rankings produce quite different results, depending on what proxy is used to capture aspects of scientific quality. For that reason, an alternative ranking is developed and considered as a quality indicator, based on *membership on academic editorial boards* of professional journals. This ranking may be argued to constitute a good approximation of the appreciation, and hence the quality, attributed by professional peers.

A significant result of our empirical study is that *"quantitative"* and *"qualitative"* rankings are not linearly related to each other. Instead, the number of publications shows an inverted u-shaped relationship to scholars selected as board members. This suggests that persons scoring high in publication rankings will score only modestly in our alternative ranking. For this reason high scores in publication rankings should *not* become the *only* goal of research evaluation. Publication rankings disregard features that are difficult to measure [Holmström and Milgrom (1991)]. We do not claim that the ranking based on editorial board membership, here developed, constitutes a better ranking method. However, we argue that publication rankings disregard other, important scholarly contributions.

Section 2 gives a short overview of the rankings currently in use, based on publications and citations, and identifies their shortcomings. It is discussed how, and to what extent, quality is captured by an alternative definition of scientific worth, namely membership on editorial boards. Section 3 presents the empirical results for a sample of 5,794 researchers who in the period from 1997-2007 published their research in at least one of 11 international top-journals of the management and organization research community. In 2009, 1,316 scholars held at least one editor, co-editor or board position in these journals. Section 4 argues that, due to the substantial instability of scientific rankings, more care should be taken when using rankings for decision-making, in particular when making decisions about the careers of individual scholars.

[2] Examples of prominent rankings are ISI Web of Knowledge Journal Citation Report [The Thomson Corporation (2008)]; VHB-JOURQUAL2 [Hennig-Thurau et al. (2004); Schrader and Hennig-Thurau (2009)]; WU Journal Rating [Wirtschaftsuniversität Wien (2008)]; or Handelsblatt Ranking [Handelsblatt (2007)].

2. Current Scientific Rankings

2.1. Quantitative Rankings

Evaluating scientific quality is notoriously difficult. "One such difficulty is that the production of research typically involves multiple sources of input and output, which makes the use of standard parametric techniques problematic. Another, more serious problem is that only minimal 'engineering' knowledge is usually available to analyze the interrelationship between the research inputs that are used and the research outputs that are produced" [Cherchye and Vanden (2005): 496]. Ideally, established experts in the field should scrutinize the published scientific results. In practice, however, committees with general competence, rather than specialists, often evaluate primary research data. In the past, these committees used peer review and other expert-based judgments until claims were made that expert judgments could be biased and, therefore, be inferior to seemingly objective measures, such as the number of publications and citations [Horrobin (1990); Moxham and Anderson (1992)]. The opinions of experts may indeed be influenced by subjective elements, narrow mindedness, and limited cognitive horizons. These shortcomings may result in conflicts of interest, unawareness of quality, or a negative bias against young scientists or newcomers to a particular field. Today, these committees tend to employ secondary criteria,[3] and it is hardly surprising that the prevalent ranking principle for evaluating research focuses on quantity, which appears to be an objective indicator directly related to published science [Adler et al. (2008)].

Such bibliometric indicators have a number of advantages. First, the data are easily available, for example, from publication lists or other data sources like the Web of Science. Second, bibliometric counts seem to be objective indicators. Third, the comparison between a large number of candidates or institutions is facilitated. When the number of publications and the number of citations are collected, an effort is also made to take into account the importance or the quality of what is published.

The publication measures reflect the scientific publications in which papers have appeared. Thus, for example, most rankings ignore publications such as books, general

[3] Rigby and Edler [(2005)] analyzed the degree to which the bibliometric information of 169 research groups in economics, econometrics, and business administration relates to the assessment results of three evaluation committees. More than half of the variance of the overall quality judgments of the committees can be predicted by using a handful of bibliometric variables, notably the number of publications in top class and international refereed journals, the number of international proceedings, and the number of Dutch journal articles.

public notices, handbooks, and other collections of articles, as well as anything published in a non-refereed journal [Johnes (1988); Reedijk (1998); Donovan and Butler (2007); Adler and Harzing (2009)]. Publications in refereed journals are categorized according to the prominence of the journal measured by impact factors.[4] However, they are subject to various problems. First, it is neglected that the citation rates of an article determine the impact factor of a journal, but not the reverse [Seglen (1997)]. Seglen [(1994)] shows that 15 percent of the articles account for 50 percent of the impact factor of a journal. Other research points out that many top articles are published in lower ranked journals, and many average articles are published in higher ranked journals [Singh et al. (2007); Adler and Harzing (2009)]. Second, the obscure weighting of journals according to their prominence often coincides with a remarkable incompleteness of the data base [Adler and Harzing (2009); Albers (2009)].

It is hardly surprising that the ranking positions of scholars depend on the precise execution of the rankings [Coupé (2003); Meho and Rogers (2008)]. The effort to capture a qualitative aspect in the current rankings relies largely on citations. Citations in more prominent journals (where prominence is again measured in terms of citations) are weighted higher in the rankings than those in lesser journals. Thus, the procedure is recursive. This entire process originally started with journal analyses, but nowadays has been extended to include countries, universities, institutes, and even individual researchers. In a sense, the academic world has gradually become obsessed with impact factors. Citation records are considered a benchmark establishing the ability to do high quality research, not only for authors, librarians, and journal publishers, but also for science policy makers [e.g. Nederhof and van Raan (1993)]. According to this view, citations are taken as evidence that the individual, the journal, the institute, or the country cited has carried out work that is judged to be relevant to current research frontier and is useful to those attempting to extend the frontiers [Diamond (1986)]. However, to the extent that citations inadequately account for scientific quality, the corresponding rankings distort the informative function they claim to provide.

The use of citations as an indicator of scientific quality reveals five major shortcomings.

[4] Many journal rankings according to citations have been undertaken [e.g. Liebowitz and Palmer (1984); Diamond (1989); Laband and Piette (1994); Cheng et al. (1995); Hennig-Thurau et al. (2004); Paul (2004); Sombatsompop et al. (2004); Podsakoff et al. (2005); Handelsblatt (2009); Schrader and Hennig-Thurau (2009)].

First, they do not take into account whether a scholar's contribution is valuable and furthers the course of scientific knowledge, is neutral, or hinders scientific progress. The latter happens if it promotes an unproductive or even unsound approach, theory, method, or result. If qualitative aspects were taken seriously, unproductive citations would be given a zero rating and counterproductive citations would weigh negatively.

Second, scholars are human beings subject to the same influences as every other individual. Following fashionable trends or herding behavior are examples of such influences [Banerjee (1992); Bikhchandani et al. (1992); Chamley and Gale (1994)] where scholars quote papers simply because they have previously been cited by other researchers. Simkin and Roychowdhury [(2005); (2006); (2007)] show that the probability of a scholar being cited is affected by the number of citations he or she already has. This "Matthew Effect" in science [Merton (1968)] leads to the emergence of "star" papers and authors [Barabási and Albert (1999); Bonitz et al. (1999); Faria (2005); Baccini and Barabesi (2008)]. These stars are like social celebrities whose only claim to fame is, that they are famous, but few know or care about how they reached stardom. In the case of celebrities, this is of little relevance as their main objective is to entertain. However, in the case of science where a commitment to the search for knowledge and understanding is so important, such citations should be put into a different category; they should not count as positive contributions.

Third, the fact that a particular work has been cited does not mean that it has been read [Donovan (2006)]. While no scholar would be foolish enough to publicly admit that he or she cited articles without having read them, there is now empirical evidence that this does occur to a significant extent. Evidence of this can be found in the identical misprints that appear repeatedly in citations. Such misprints are most likely to occur when authors copy reference lists contained in other's papers. Based on a careful statistical analysis, Simkin and Roychowdhury [(2005)] conclude that about 70–90 percent of scientific citations are copied from the lists of references used in other papers. While this result does not automatically imply that all citations copied from reference lists are not read, it is an indication that some papers cited have not been read by those citing them.

Fourth, citation counts do not indicate quality independent of the contested knowledge [Beed and Beed (1996)]. In contested disciplines, such as management or other social sciences, differential citation counts indicate which author, article, or journal embraces the dominant theory most completely and which does not [Lee

(2006)]. Articles embracing unfamiliar reasoning and arguments are assumed to have unimportant content and, therefore, are hardly cited. Thus, differences in citation rankings often reflect the subjective or ideological rejection of the theory employed rather than the research quality or the importance of the research to the discipline. Consequently, in departments or universities where tenure, promotions, salaries, and department funding are affected by citation rankings, controversial findings, which are mostly published in less prestigious journals, are penalized [Coats (1971); Bell and Seater (1978); Bräuninger and Haucap (2003); Lee (2006)]. Evaluations relying on citation counts, therefore, crowd out the crucially important innovative research in the social sciences. They encourage a detrimental homogeneity in science, as has been shown for business schools [Gioia and Corley (2002)].

Fifth, it is widely accepted as a best practice in the bibliometric community not to apply publication and citation measures to individuals, but to higher levels of aggregation, in particular, to universities or countries [van Raan (2003)]. Bibliometric scientists argue that although these indicators may make sense in the natural and life sciences such indicators prove problematic in the social and behavioral sciences where journals play a lesser role as primary communication channels; many research fields are locally oriented, and older literature is more dominant [van Raan (2003)]. In fact, these restrictions are often disregarded [see for example the ranking attempts of German business scholars or economists by Bommer and Ursprung (1998); Handelsblatt (2006), (2007); Fabel et al. (2008); Handelsblatt (2009)].[5] The benefit of such proceedings is doubtful and may negatively affect the quality of the social sciences.

The list of shortcomings could easily be extended to include the different citation habits of authors in different fields and subfields, the selectivity of citations by authors (e.g., easily available papers are cited more often), unintended spelling errors by authors in citation lists, mistakes in counting and classifying citations and accrediting them to journals and authors, and the inclusion of self-citations (especially by determining the journal impact factor).[6] On account of all these shortcomings when using citations as reliable indicators of scientific quality, there is good reason to consider alternative

[5] Even though the Handelsblatt Ranking is more accepted in economics it rapidly spreads in the field of business administration and becomes accepted. For example, some German business scholars documented their ranking position on their homepages, faculties published their rankings in newspapers, or appointments committees nowadays use the Handelsblatt Journal Ranking to compare the publication lists of applicants in the field of business administration.

[6] Some editors freely admit that they encourage authors to cite as many publications in their journal as possible in order to raise their impact factor [Garfield (1997)].

approaches. The next section discusses the possibility of taking quality into account by considering the reputation of scholars among their peers, approximated by counting membership on scientific editorial boards.

2.2. Qualitative Rankings

Scientific knowledge is not some immutable objective stock that grows quantitatively; rather, it is fallible, historically contingent, contestable, and changes unpredictably and qualitatively. This is especially true for the social sciences. What constitutes scientific knowledge depends on the approval by the scientific community [Lee (2006)]. A defining characteristic of any science is that its participants consider themselves members of a community of scholars. When producing scientific knowledge, they depend to some degree on each other. Scientists who do not fit into this structure of dependency or do not produce the "right" kind of knowledge are not permitted to be part of the community. For this reason, embeddedness in a research community is a quality indicator of research. It ensures that the scientists and their research meet research standards accepted by their scientific community, for example, utilizing proven research techniques.

Professional scientific journals are the publication outlets for different research communities. The editorial boards of these journals play a considerable role, both in the dissemination of information and in its evaluation by colleagues. "It appears reasonable that these positions are held by people who have the confidence and trust of their colleagues in the journal's areas of coverage for the journal to be successful in attracting quality submissions." [Kaufman (1984): 1190]. In this respect, the editorial boards constitute the true experts in the research community, and being appointed an editorial board member is not only a great honor, but can also be seen as one indicator of scientific quality.

The board fulfils two different functions: (1) it assists the editors in choosing the most suitable articles for the respective scientific field, and (2) membership on the board is purely honorific and reflects one's standing in the profession as evaluated by one's peers. Honorary members are often chosen to signal the orientation of the review (e.g., whether its emphasis is on theoretical or empirical work). More importantly, journals want to profit from the reputation of honorary board members [Kaufman (1984)]. The more distinguished these members are within their discipline and community, the higher

is the journal's reputation because renowned scholars do not join the boards of poor quality journals (were they to do so, their own reputation would decline). Both, when board members contribute to editorial decisions and when they are mainly, or only, honorary members, the choice of members should be based on quality. A (chief) editor wants to have scholars at hand who help him or her make the best possible decisions; a disreputable individual or person lacking expert knowledge is of little use. At the same time, as the scholars represented on boards have an excellent professional reputation, membership on boards can be taken to be a reasonable approximation of the quality of a scholar as judged by his or her peers.[7] Gibbons and Fish [(1991): 364] take it as a matter of course: "Certainly, the more editorial boards an (scholar) is on, the more prestigious the (scholar)."

It should be noted that using editorial board positions as a quality indicator also has disadvantages. First, examining the membership on editorial boards clearly favors established scholars. However, using the number of publications and citations has the same disadvantage. This limitation should therefore not bias our results when comparing quantitative and qualitative rankings. Second, one could argue that only a small fraction of all scholars are members of editorial boards. This fact distorts the results because it includes only the best scientists. However, management scholars in many countries have their own journals. Within these journals, the countrywide experts of a field are members of editorial boards. While our research will mainly rely on scholars who enjoy an international reputation, research evaluation could also include country journals, e.g. *sbr/ZfbF*, *DBW*, *ZfB*, or *Die Unternehmung*. Third, one could criticize that some scholars are elected to an editorial board simply because they are well known regardless that they are no longer productive. While this argument may be true, it would be wrong to conclude that these scholars have no research quality. As we will show in the next section, a good scholar should be engaged also in other tasks besides publishing. In our analysis we will incorporate this criticism by excluding editorial board members without publications.

[7] This procedure has been put forward in the past and undertaken for small and distinct sets of journals by Kaufman [(1984)] for finance faculties, Kurtz and Boone [(1988)] for marketing faculties, and Gibbons [(1990)] for statistics faculties.

2.3. Relationship between Quantitative and Qualitative Rankings

The publication record of a scholar as measured in quantitative rankings can be, but not necessarily need be, positively correlated with his or her engagement in multiple other tasks [Frey (2010)]. Besides doing research and having their research favorably published, the main tasks of scholars are teaching, supporting young scholars, informing and advising the public, participating in university administration or reading and reviewing the work of other scholars. For the following reasons, it is likely that a negative correlation between publishing and the previously mentioned tasks exists.

- First, because of time-and-effort constraints, few scholars are able to perform these tasks sufficiently well and furthermore fully engage in the arduous publishing task.
- Second, a publishing record is easy to measure, while performance with respect to the other tasks is not. The multiple-task effect [Holmström and Milgrom (1991); Prendergast (1999)] suggests that academics mainly engage in publishing efforts and disregard the other tasks.[8]
- Third, the distribution of talent among those scholars who are able to publish in the highest ranked journals and those who are not, is likely to overlap. It follows that the worst scholars with top publications are less capable to excel in the other tasks (they are ‘‘lemons’’) than the best scholars who are without A-level publications.
- Fourth, the writing of articles for A-journals is a quite specialized activity [Starbuck (2009)]. Scientist performing well in the specialized activity of writing articles for A-journals may perform only modestly in the other six tasks.

We therefore expect that the position of a scholar in quantitative rankings, i.e. his or her number of publications, is not strictly related linearly to his or her position in our qualitative rankings, i.e. using editorial board positions as a quality indicator. We will argue that the position of a scholar in quantitative rankings is only linearly related to his

[8] Multiple tasking effects can also be obtained with regard to publication strategies [Adler and Harzing (2009); Osterloh and Frey (2009)]. To receive high scores in publication and citation rankings may become the goal rather than to examine and determine how and why the conducted research may be important. There are many examples for such tactics like the “slicing strategy” [Butler (2003)], i.e. the maximization of publications by dividing research into small publishable units, the “academic prostitution” strategy [Frey (2003)], i.e. the voluntary deformation of research results, the inclusion of wasteful citations, or the adding of famous, imaginary co-authors to survive review processes, or the “mediocrity” strategy [Osterloh and Frey (2009)], i.e. the decision to conduct uncreative, orthodox research to please the average referee and thus to increase the likelihood of publication.

or her position in qualitative rankings, up to a point; beyond this point, there is less benefit realized from a higher number of publications, and it may constrain the position of a scholar in qualitative rankings [Frey (2007)]. In theory u-shaped relationships are quite common for innovative or creative activities where multiple outcomes exist [Perry-Smith and Shalley (2003)].

On the one hand, editorial board members may need a minimum number of publications. Scholars who are able to continuously publish their research in reputable journals not only show a high research motivation but also talent [Cole (1992)]. Having such scholars in the editorial board first signals research quality and thus improves the number and quality of submissions to a journal. Second, effort and expert knowledge are important to fulfill the tasks within editorial boards, e.g. to distinguish between good and excellent research, to identify errors, to evaluate the trustworthiness of research, or to responsibly fulfill assignments within short time periods.

On the other hand, scholars who may represent an excellent choice as editorial board member may not have a large number of publications. Being visible as a possible editorial board member requires additional task investments, which reduce the time for publishing. In theory this effect has been labeled multitasking effect. For complex problems consisting of multiple tasks – like research - it means that people will or can concentrate only on certain tasks and neglect anything else [Holmström and Milgrom (1991)].

First, scholars who are visible as a possible editorial board member have to be good reviewers. Being a good reviewer can be, but not necessarily need be, positively correlated with the number of publications. Reviewing involves spending valuable time on the work of other scholars and wide reading. Reviewing and reading reduces the time for writing and publishing. According to the multitasking theory it seems likely that many scholars may be quiet productive in one of both area but only few scholars will be in both areas.

Second, scholars who are visible as a possible editorial board member should be associated with outstanding research *content* in order to stimulate the research community to submit their publications. Outstanding research can be, but not necessarily need be, positively correlated with the number of publications. Producing meaningful and innovative research content is often slower than producing rigorous but less meaningful, standard research content. Further, the acceptance of innovative research is far from certain [Dasgupta and David (1994); Nelson (2004)]. Again, it

seems likely that only few researchers are able to produce highly innovative research by simultaneous maximizing their number of publications. Editorial boards may be more interested in innovative research and less interested in the number of publications.

Third, while both former arguments assume that scholars asked as editorial members do not maximize their number of publications, it is as well possible that scholars having a large publication record are nevertheless asked to participate in editorial boards but are less willing to engage in this task. Being a member of an editorial board entails time-and-effort constraints. There is less time for publishing and some scholars may simply prefer to publish instead of serving on editorial boards.

It seems thus plausible to assume that the relationship between a scholar's position in the quantitative and in the qualitative rankings is shaped curvilinear. While a minimum of publications may be important to guarantee the recognition of a scholar as a possible editorial board member, too many publications may reflect a lack of investment in multiple other tasks, which are also essentially important for editorial board members. This leads us to the hypothesis that is to be empirically tested:

Hypothesis 1. The publication record of individual scholars, as measured in quantitative rankings, shows an inverted U-shaped relationship to the probability of being selected as an editorial board member as measured in our qualitative ranking.

3. Comparison between Quantitative and Qualitative Rankings

3.1. Sample

In order to analyze the systematic non-linear relationship between quantitative and qualitative rankings, we selected a sample of journals, which are considered to enjoy an excellent *international reputation* within the field of *management and organization*. This sample is representative for researchers who publish papers on dominant theories within this research community. We expect similar effects for other sciences as well as for lower-ranked journals. However, it should be noted that our sample does not provide a comprehensive overview of all research communities within the organization management community. In particular, heterodox research communities embracing contested knowledge are excluded [Lee (2008)].

To determine the boundaries of our sample of journals we proceeded in three steps. First, to include only one and not several citation and publication habits we draw on personal experience which journals are read and considered as possible publication

outlets by scholars of the organization management community. Sub-discipline journals strongly related to other fields, e.g. to psychology, innovation management, accounting, finance, marketing etc., are excluded.

Second, to bypass the obscure weighting of articles by impact factors we validate the impact-homogeneity of our sample using different journal rankings. Table 1 pictures the various ranking positions of the journals included. Column II and III indicate that the journals maintain top-positions when only management and business journals of the ISI web of knowledge are considered.[9] As shown in column I, all journals have high journal impact factors reaching from 1.5 up to 5. Columns IV, V, and VI show that all publication outlets are classified as A+, A, or B journals within the several ranking. Finally, column VII contains a self-constructed measurement of journal impact. It measures how often an article is cited correcting for the number of references and thus for sub-community size. More references increase the likelihood of citations, which should be taken into account. According to this measure, in particular journals lower ranked in the former standard proceedings have a higher impact within their sub-discipline.[10]

Table 1 about here

We collected data on all articles and reviews published in the journals selected within the time period 1997-2007. Book reviews, editorial material and proceedings were excluded. Publications of the years 2008/2009 were excluded for two reasons. First, we measure editorial board membership in the year 2009. The time lag ensures that authors who started to publish their research in 2008/2009 - and thus had no chance of being considered a possible board candidate - are excluded. Second, we use the average number of yearly citations and the journal impact factor as control measures. On average, articles get most citations two years after they are published [Garfield (1979)]. This information helps to standardize citation rates. To identify multiple articles of one

[9] The missing ranking positions are shared by marketing and finance journals, i.e. by different research communities.

[10] We further cross-validated the community-aspect by analyzing journal relatedness. First, we evaluated the percentage of citations between the journals (information available in ISI web of knowledge). The results substantiated that the included journals often refer to each other indicating one community. Second, we examined how often authors have articles in two or more of the included journals. The findings validated that many scholars indeed publish in several journals of our sample. Third, we examined how often scholars are editor board members in two or more of the included journals. The findings validated that the included journals are related to each other by cross-editorship.

scholar and his or her editorial board membership, the data were checked by using the institutions and countries of scholars with ambiguous names or initials of first names.

3.2. Dependent variable

Editorial board membership. In May 2009 we consulted the homepage of each journal in our sample and collected the names of scholars who served as editors, co-editors, or board members at that time. Various definitions of editorial board membership are possible: (1) the broadest possible definition includes all positions, i.e. editor, co-editor and board member. In our initial sample 1,316 persons held at least one editor, co-editor or board position. 16.4% individuals had more than one position. We constructed a variable "*Editor Board Membership*" in 2009, identifying the number of editor, co-editor or board member positions of a person. (2) The board definition solely includes board member positions. In our initial sample 1,181 persons held at least one board position. 15.3% had more than one position. We constructed a variable "*Board Membership*" indicating the number of board member positions of a person in 2009.

465 scholars, all board members, never published an article within the journals selected during the last 10 years. This finding is a first indication of the accuracy of our hypothesis suggesting that the publication record of scholars does not inevitably reflect his or her ability to perform well as an editorial board member. The finding could, however, reflect the need for appropriate representation, e.g. with respect to the representation of different countries. These scholars without publications were excluded from our statistical analysis because one could argue that the empirical findings are driven by lazily scholars sitting in editorial boards.[11] For the regression analysis our measurements of "Editor Board Membership" considered 851 active editors, co-editors or board members and of "Board Membership" 716 active board members.

3.3. Independent variable

Publication record. For each author we counted all articles published in the selected journals. We adjusted for tenure effects since experienced scholars have a higher probability of being a board member. For each scholar we calculated the yearly number of articles published beginning with the year of his or her first publication. For example, if a scholar published his or her first article in the year 2000, we averaged the number of

[11] The empirical findings are however comparable if editors without publications are included.

articles over 8 years. The year of entry into the research community is a better adjustment for tenure effects compared with age. Age does not account for the effective time a scholar is part of the community. In particular US scholars often start their research careers after they had careers in the industry.

3.4. Control variables

Additionally we included several control variables, which may affect editorial board membership and are related to the publication record of a scholar but do not necessarily reflect quality aspects.

Co-authorship. We took into account the average number of co-authors per article. For each scholar we took the sum of co-authors over all articles and divided it by the number of articles. Scholars with a higher number of co-authors may increase the number of published articles due to economies of scale. Further, they may have a higher direct influence within their research community and thus a higher likelihood of becoming a board member.

Citations. For every scholar we measured the average number of citations per article. The index is a proxy of scholars' visibility, for example due to conducting high quality research, publishing dominant theories, being the target of herding behaviour, or engaging in citation networks [Moed et al. (1985)]. Authors who have a high visibility may increase their publication record and their likelihood of becoming a board member. We adjusted the number of citations by the age of each publication.

$$\text{Citations} = \frac{\sum \frac{\sum \text{Citations per artcile}}{\text{Age of publication}}}{\sum \text{articles}}$$

Journal Impact. We also controlled for the average journal impact factor per article [The Thomson Corporation (2008)]. This index measures the likelihood of board membership due to reputation effects. Authors publishing in highly visible journals may gain higher visibility themselves.

Entry Year. Even though the former measurements were adjusted for tenure effects we additionally controlled for entry year, i.e. the year of the first publication. Established scholars have a higher probability to become an editorial board member. They can demonstrate a continuous publication history and have accumulated a higher stock of expert knowledge. They also have higher social capital. Due to their expert

knowledge, experience, and social capital such scholars may have a higher yearly publication record.

Pages. We measured the average number of pages per article. Longer articles may be an indication for more essential research [Hofmeister and Ursprung (2008)] and thus increase the probability of publishing or becoming an editorial board member. However, the lengths of an article may not necessarily reflect quality aspects. It could also reflect different research streams (e.g. theoretical research). Both issues may affect publication record as well as editorial board membership.

3.5. Independent variable for robustness test

Corrected Research Output. We tested the robustness of our results by applying a adjusted indicator for research evaluation as suggested by Hofmeister and Ursprung [(2008)]. Instead of counting the number of A+-articles this output measurement tries to capture quality and effort aspects. The index multiplies the number of pages with the journal impact factor and corrects for the number of co-authors. Hofmeister and Ursprung [(2008)] suggest to apply this index within the Handelsblatt-Ranking.[12]

$$\text{Corrected Research Output} = \frac{\sum \frac{\text{Pages per Article} * \text{Journal Impact per article}}{\text{Co - authors per article}}}{\text{publication tenure}}$$

For descriptive statistics and bivariate correlations please contact the authors.

3.6. Analysis

We use poisson regression analysis to predict the dependent count variables “Editor Board Membership” and “Board Membership” and include the linear and quadratic term of publication record. The distributions of the independent variables “publication record”, “co-authorship”, “citations”, and “pages” are extremely skewed and may bastardize the regression results due to outliers. We transformed these variables by taking the logarithm. We applied three robustness checks. First, we ran separate regression models for each entry year. Second, for one of the most important journals,

[12] Currently, the following formula is applied:

$$\text{Publication record} = \sum \frac{2 * \text{Journal Impact per articel}}{(\text{Co - authors per articel} + 1)}$$

The formula corrects for the number of co-authors, but not in a linear way. For example, in a journal with the impact “1” an article without co-authors obtains the value “1”, with one co-author the value “.67” and with two co-authors the value “.5”.

we ran a regression model that included former editorial board members. Third, we tested if our results held with respect to the corrected measure of research output.

4. Empirical Results

4.1. Descriptive Findings

Table 2 presents the descriptive results of a ranking of scholars according to the number of editorial boards on which they serve. The table shows every scholar holding three or more "Editor Board Membership" positions. The table compares their positions with the position of these scholars in two publication rankings. To obtain publication positions we rank all scholars of our sample according to their yearly (a) publication record and (b) corrected research output in our sample[13]. The results show that among the 48 scholars holding three or more editorial board positions only 3 scholars would be ranked among the 100 most successful scholars in a ranking according to publication record. The table further shows that only 3 of scholars would be ranked among the 100 most successful scholars in a ranking according to corrected research output. Figure 1 provides a graphical overview of how an editorial board membership ranking is related to a ranking according to the publication record of a scholar. According to the results, many scholars listed in a publication ranking in the foremost ranks are not even listed in a quality ranking, while many scholars listed in a board membership ranking in the foremost ranks would be listed in a quantity ranking in the lowest ranks. The results confirm that a ranking of individual scholars is highly dependent on the type of ranking used.

Table 2 & Figure 1 about here

4.2. Statistical Findings

The results of the poisson regression analysis are shown for "Editor Board Membership" and "Board Membership" in Table 3.

Linear model. In the linear model the publication record of a scholar shows a strong positive effect on the number of board membership positions (see column I and III). The

[13] Of course one could argue that all publications of these scholars should be included and not only their publications in the 11 journals. However, all rankings are restricted to this list of journals and only articles published in these journals were counted. In contrast to many rankings our journal list was not selected randomly but by means of community aspects.

explanatory power of the model significantly improves if the linear term of publication record is included (Model Improvement for editor board membership: 20.85***, Model Improvement for board membership: 12.93***). The results show that in general scholars with more previous publications have a higher probability of being selected as a board member.

Table 3 about here

Quadratic model. Column II and IV report the results when the quadratic terms of publication record were also included. Compared with the linear model the explanatory power significantly improves if the quadratic term is included (Model Improvement for editor board membership: 149.08***, Model Improvement for board membership: 130.30***). A comparison of the CH^2-statistic, indicating the improvement of the explanatory power of a statistical model, between the linear and quadratic model demonstrates that a model that includes the quadratic model is significantly more capable to explain the appointment of scholars in editorial boards. Thus, even if the overall effect of the publication record on board membership is positive, the link between the measure of quantitative rankings and the measure of qualitative rankings is not strictly linear.

Figure 2 about here

Figure 2 shows the predicted curve shape with the example of board membership (results of table 3, column II). The results support our hypothesis by showing that the publication record of a scholar shows an inverse, U-shaped relationship to his or her number of editorial board membership positions. According to the results authors with a yearly publication record of around 0.8 articles have the highest chance to be elected as a board member. A lower publication record as well as a higher publication record decreases this probability. Thus, journals are indeed interested to appoint board members who show a constant publication history but they are not interested in having board members who show a very large number of publications.

4.3. Robustness check

We made three robustness checks to validate the results.

First, we analyzed the data to see if the curvilinear relationship is driven by tenure effects. Even if we controlled for the year of first publication it is possible that especially experienced scholars show a medium or low publication record. We therefore divided the sample in sub-groups according to the variable "entry year" and ran separate regression for groups of scholars who started to publish within the same year. The results show that the curvilinear effect of the publication record is robust and significant (for the results please contact the authors). The effects get weaker for scholars with very short community tenure.

Second, we analyzed the data to see if the inclusion of former board members were to change the results. As many journals rotate their editorial boards it may be the case that researchers no longer are members of the board but are still well respected and were on the board in the past. The inclusion of these scholars could change our results. We selected the Academy of Management Journal (AMJ) because they had recently changed their editorial board. We predicted the membership in the current and/or former AMJ board by including the data for all authors who had published at least one AMJ-article between 1997-2007. The inclusion of these individuals did not change our general findings of a curvilinear effect of publication record on board membership (for the results please contact the authors). We also validated the findings on the AMJ board by excluding all scholars who already had served as a former board member but did not serve on the board in 2009. The findings also show a significant curvilinear effect.

Third, proponents of quantitative rankings often argue that rankings measure every aspect of research quality if they are correctly administrated. For example Hofmeister and Ursprung [(2008)] suggest that quality and effort aspects of research are better captured if output indicators multiply the number of pages per article by the journal impact factor of an article and further correct for the number of co-authors. We counted the index for every scholar in our sample. Table 3 shows the results.

In the linear model the results show again that scholars with a higher research output have more board member positions (column V and VII). Column VI and VIII report the results when the quadratic terms of research output where also included. The negative and significant quadratic terms support again that also the corrected research output of a scholar shows an inverse, U-shaped relationship to his or her number of board membership positions. Compared with the linear model the additional explanatory power of the quadratic model is however lower as in Table 3. It indicates that the corrected research output of a scholar may be a better measurement of "research

quality" as simple publication counts. However, even the corrected measure of quantitative rankings and the measure of qualitative rankings is not strictly linear. The results thus substantiate that quantitative and qualitative rankings do not show the same results with respect to the position of scholar within both rankings.

We made also robustness checks by calculating research output with a formula that instead of using the journal impact factor values an A+-publication with 9, a A-publication with 3 and a B- publication with 1 (journal quality is measured according to the Jourqual 2008). The results are comparable to the former results.[14]

5. Discussion and Conclusions

We have argued that quantitative rankings, e.g. publication or citation measures, capture only some aspects of scientific quality. For that reason, an alternative ranking system has been developed. It is based on membership on academic editorial boards of professional journals. This "qualitative" ranking considers the reputation and recognition of scholars among their peers and recognizes their contributions to the research community in terms of reading and reviewing the work of others. We compare the results of quantitative and qualitative measures. The empirical results indicate that the position of a scholar in qualitative rankings, i.e. using the selection in editorial boards as a quality indicator is not strictly related linearly but rather in an inverted U-shaped way to his/her position in quantitative rankings, i.e. his/her number of (A+) publications. Especially for scholars scoring high in publication rankings, our study suggests that rankings based on quantity of publications are incompatible with rankings based on membership on editorial boards. This suggests that the two indices do not measure the same phenomenon. Science needs both types of scholars; those who are productive in terms of publishing and those who are productive in terms of running journals. For that reason, research evaluations should consider multiple criteria rather than publication or citation counts only.

This conclusion is in line with prior research. Henrekson & Waldenstrom [(2007)] ranked every full professor in economics in Sweden using seven established measures of research performance. Their analysis shows that the ranking can vary greatly across measures and that depending on the measure used the distribution of total research

[14] It should be noted that we are not able to overcome possible endogeneity problems. It seems plausible that the election of a scholar in editorial boards may increase its publication output. This bias should be however small because the u-shaped relationship between publication output and editorial board membership suggests that editorial board members do not have a maximum of publications.

output is valued very differently. This finding is also validated by other authors [Coupé (2003); Donovan and Butler (2007); Lo et al. (2008)] suggesting that research quality can only be captured through multiple indicators. This result is in line with bibliometric research that warns against using publications and citations as the only measure to capture the research effort of individuals, especially individuals in the social sciences [van Raan (2003)].

For the career decisions of individual scholars, bibliometric rankings should be used with utmost care. "Crude rankings … cannot be helpful to the policy maker" [Johnes (1988): 177]. Funding agencies and other decision makers desiring to evaluate the research efforts of individual researchers or of the whole university sector should go beyond applying standard quantitative measures of research performance to the social sciences [Katz (1999); Luwel et al. (1999); Council for the Humanities Arts and Social Sciences (2005)]. Research quality is diverse, uncertain, and multidimensional. It is highly questionable that there exists one, true indicator of research quality, which captures the efforts of scientists within all research communities to the same extent. In some communities, for example, only empirical research constitutes good research, while in other communities to pose a novel research question or to contribute an original theory is more important. For this reason, indicators capturing research quality are not only multidimensional, but also highly dependent on the specific research community. However, what are the alternatives for research evaluation?

One possibility to solve the multiple-tasking problem would be to measure all the aspects important for an academic career: teaching, supporting younger scholars, connecting to the public, and participating in academic administration or editorial board membership [Frey (2010)]. However, attempting to measure this would lead to an enormous amount of evaluation, and scholars would invariably find ways to ''beat the system''.

A quite different option would be to return to approved methods, i.e. to an overall evaluation of (young) scholars based on the intuitive knowledge of seasoned scholars [Frey (2010)]. There are various possibilities to select such persons. An attractive option would be to elect them by a vote among the members of the respective professional organization. This would ensure that the peers making up the ''Republic of Science'' remain in control. The scholars selected by such a procedure would be under the scrutiny of the profession as a whole and would lose their reputation among their peers if they pushed unfounded personal interests. The chosen scholars would have an

incentive to decide as objectively as possible while maintaining an un-biased perspective. This option offers the members of professional organizations more competence and control compared to the system prevailing today and helps them to fight the unilateral tendency of young scholars to put their whole effort into publishing A-articles while neglecting other tasks. Nevertheless, such a procedure is viewed as ‘‘unscientific’’ as it is not based on the allegedly objective calculation of publications in A-journals. However, such a view is too simple. According to recent psychological research, ‘‘gut feelings’’ are often superior to in-depth analyses [Gladwell (2005); Gigerenzer (2007)]. Indeed, many established scholars proceed in this way when they exchange their views about younger scholars. What matters to them is indeed that they feel good about a young scholar, and not whether someone has published an article in a particular A-journal. Using the intuitive knowledge of seasoned scholars has, of course, disadvantages. There is certainly the danger of promoting an ‘‘old boys’ network’’ giving young scholars an incentive to pander to the seasoned scholars. Personality and friendship may matter more than research excellence because gut feelings are to some extent influenced by such perceptions. On the other hand, these alleged disadvantages should not be overrated. It should not be forgotten that the present system focusing on A-journal publications is also influenced by personal relationships and preferences, as well as by selfish interests. It has, for instance, become common practice to abundantly and positively cite possible referees to raise the chance of acceptance. Even more importantly, scholars in dire need of their articles are induced to follow the referees’ ‘‘advice’’ even if they differ from their own insights and views. This behavior has been called ‘‘academic prostitution’’ [Frey (2003)].

A third possibility is to restrict publication rankings to the early years of a scientific career [Osterloh and Frey (2008)]. Scientists initially must learn the tools of the trade and must show that they are able to use them with profit. Thereafter, one should let scholars proceed as they see fit for themselves. This allows them to then exhibit their intrinsic motivation in scientific research (at least) for the remaining part of the career. An obvious disadvantage of this is that scholars in later stages of their careers are not subjected to any external monitoring and may no longer engage themselves in research. This may well be the case but an academic system should be designed to enable the best rather than to prevent the worst.

Yet another possibility would be to more openly shape several levels of scientific careers [Frey (2010)]. In particular, there should be careers at universities and research

institutes for which it is sufficient to have published in one or a few of the hundreds of general and specialized journals, or also in the form of books and internet publications, as well as participation in current public debates. Such a policy would serve to produce a broader portfolio in the management profession with respect to type of contribution, content, techniques and universities. Through the present focus on A-level publications, diversity—a crucial requirement to guarantee originality—is indeed threatened as [Osterloh and Frey (2008)].

Each of these (and possibly other) options has both its advantages and disadvantages, which must be carefully considered. This article does not propagate any of the options discussed but wants to call attention to the major shortcomings of quantitative rankings: Publication or citation rankings disregard important scholarly contributions, e.g. the investment in multiple and/or difficult tasks, which are, important for research. In the long run quantitative research rankings may therefore crowd out such contributions, worsening, instead of improving, research quality.

6. References

Adler, N. J., and A.-W. Harzing (2009), When Knowledge Wins: Transcending the Sense and Nonsense of Academic Rankings, *Academy of Management Learning & Education* 8(1), 72–95.

Adler, R., J. Ewing, and P. Taylor (2008), Citation Statistics, *A Report from the Joint Committee on Quantitative Assessment of Research (IMU, ICIAM, IMS)*.

Albers, S. (2009), Three Failed Attempts of Joint Rankings of Research in Economics and Business, *German Economic Review* 10(3), 352-363.

Baccini, A., and L. Barabesi (2008), Interlocking Editorship: A Network Analysis of the Links between Economic Journals, *Social Science Research Network (SSRN)*.

Banerjee, A. V. (1992), A Simple Model of Herd Behavior, *Quarterly Journal of Economics* 107(3), 797-817.

Barabási, A.-L., and R. Albert (1999), Emergence of scaling in random networks, *Science* 286(5439), 509-512.

Beed, C., and C. Beed (1996), Measuring the quality of academic journals: The case of economics, *Journal of Post Keynesian Economics* 18(3), 369-396.

Bell, J. G., and J. J. Seater (1978), Publishing Performance: Departmental and Individual, *Economic Inquiry* 16(4), 599 - 615.

Bikhchandani, S., D. Hirshleifer, and I. Welch (1992), A Theory of Fads, Fashion, Custom, and Cultural Change as Informational Cascades, *Journal of Political Economy* 100(5), 992-1026.

Bommer, R., and H. Ursprung (1998), Spieglein, Spieglein an der Wand: Eine Publikationsanalytische Erfassung der Forschungsleistungen volkswirtschaftlicher Fachbereiche in Deutschland, Osterreich und der Schweiz, *Zeitschrift fur Wirtschafts- und Sozialwissenschaften* 118, 1–28.

Bonitz, M., E. Bruckner, and A. Scharnhorst (1999), The Matthew Index - Concentration patterns and Matthew core journals, *Scientometrics* 44(3), 361-378.

Borgman, C. L. (1990), *Scholarly communication and bibliometrics*, Newbury Park: Sage.
Borgman, C. L., and J. Furner (2002), Scholarly communication and bibliometrics, *Annual Review of Information Science and Technology* 36(3–72).
Bräuninger, M., and J. Haucap (2003), Reputation and Relevance of Economics Journals, *Kyklos* 56(2), 175-198.
Butler, L. (2003), Explaining Australia's increased share of ISI publications - the effects of a funding formula based on publication counts, *Research Policy* 32(1), 143-155.
Chamley, C., and D. Gale (1994), Information revelation and strategic delay in a model of investment, *Econometrica* 62(5), 1065-1085.
Cheng, C. H., C. W. Holsapple, and A. Lee (1995), Citation-based journal rankings for expert system research, *Expert Systems* 12(4), 313-322.
Cherchye, L., and A. P. Vanden (2005), On research efficiency - A micro-analysis of dutch university research in economics and business management, *Research Policy* 34(4), 495-516.
Coats, A. W. (1971), The Role of Scholarly Journals in the History of Economics: An Essay, *Journal of Economic Literature* 9(1), 29- 44.
Cole, S. (1992), *Making Science. Between Nature and Society*, Cambridge: Harvard University Press.
Council for the Humanities Arts and Social Sciences (2005), *Measures of Quality and Impact of Publicly Funded Research in the Humanities, Arts and Social Sciences. Occasional Paper 2,* http://www.chass.org.au/op2.pdf.
Coupé, T. (2003), Revealed Performances: Worldwide Rankings of Economists and Economics Departments, 1990–2000, *Journal of the European Economic Association* 1(6), 1309–1345.
Cronin, B. (1996), Rates of return to citation, *Journal of Documentation* 52(2), 188–197.
Cronin, B., and L. I. Meho (2008), The shifting balance of intellectual trade in information studies, *Journal of the American Society for Information Science and Technology* 59(4), 551–564.
Dasgupta, P., and P. A. David (1994), Towards a new economics of science, *Research Policy* 23, 487-521.
Diamond, A. M. (1986), What is a citation worth?, *Journal of Human Resources* 21(2), 200-215.
Diamond, A. M. (1989), The Core Journals in Economics, *Current Contents* 1, 4-11.
Donovan, C. (2006), The Chequered Career of a Cryptic Concept, *The Political Quarterly* 77(S1), 61-72.
Donovan, C., and L. Butler (2007), Testing novel quantitative indicators of research 'quality', esteem and 'user engagement': an economics pilot study, *Research Evaluation* 16(4), 231-242.
Fabel, O., M. Hein, and R. Hofmeister (2008), Research Productivity in Business Economics: An Investigation of Austrian, German and Swiss Universities, *German Economic Review* 9(4), 506–531.
Faria, J. R. (2005), The game academics play: editors versus authors, *Bulletin of Economic Research* 57, 1-12.
Frey, B. S. (2003), Publishing as prostitution? - Choosing between one's own ideas and academic success, *Public Choice* 116(1-2), 205-223.
Frey, B. S. (2007), Evaluierungen, Evaluierungen . . . Evaluitis, *Perspektiven der Wirtschaftspolitik* 8(3), 207–220.

Frey, B. S. (2010), Economists in the PITS?, *International Review of Economics* 56, 335-346.
Garfield, E. (1979), *Citation indexing: Its theory and application in science, technology, and humanities*, New York: Wiley.
Garfield, E. (1997), Editors are justified in asking authors to cite equivalent references from same journal, *British Medical Journal* 314(7096), 1765-1765.
Gibbons, J. D. (1990), United-States institutional representations on editorial-boards of U.S. statistics journals, *American Statistician* 44(3), 210-213.
Gibbons, J. D., and M. Fish (1991), Ranking of economics faculties and representation on editorial-boards of top-journals, *Journal of Economic Education* 22(4), 361-372.
Gigerenzer, G. (2007), *Gut feelings*, New York: Penguin/Viking.
Gioia, D. A., and K. G. Corley (2002), Being good versus looking good: Business school rankings and the circean transformation from substance to image, *Academy of Management Learning and Education* 1, 107-120.
Gladwell, M. (2005), *Blink. The power of thinking without thinking*, New York: Little, Brown and Company.
Handelsblatt (2006), Economist Ranking: http://www.handelsblatt.com/politik/vwl-ranking/.
Handelsblatt (2007), Economist Ranking: http://www.handelsblatt.com/politik/vwl-ranking/.
Handelsblatt (2009), Handelsblatt-Ranking Betriebswirtschaftslehre (BWL), *http://www.handelsblatt.com/politik/bwl-ranking/bwl-ranking-methodik-und-interpretation;2175006*.
Hennig-Thurau, T., G. Welsh, and U. Schrader (2004), VHB-JOURQUAL: Ein Ranking von betriebswirtschaftlich-relevanten Zeitschriften auf Grundlage von Expertenurteilen, *Zeitschrift für betriebswirtschaftliche Forschung* 56(9), 520-545.
Henrekson, M., and D. Waldenstrom (2007), How should research performance be measured?, *IFN Working Paper* 712, 1-16.
Hofmeister, R., and H. W. Ursprung (2008), Das Handelsblatt ¨Okonomen-Ranking 2007: Eine kritische Beurteilung, *Perspektiven der Wirtschaftspolitik 2008 9(3):* 9(3), 254–266.
Holmström, B. R. M., Paul (1991), Multitask Principal-Agent Analyses: Incentice Contracts, Assert Ownership and Job Design, *Journal of Law, Economics and Organization* 7(Special Issue), 24-52.
Horrobin, D. F. (1990), The philosophical basis of peer review and the suppression of innovation, *Journal of the American Medical Association* 263, 1438-1441.
Johnes, G. (1988), Determinants of Research Output in Economics Departments in British Universities, *Research Policy* 17(3), 171-178.
Judge, T. A., D. M. Cable, A. E. Colbert, and S. L. Rynes (2007), What Causes a Management Article to be Cited - Article, Author, or Journal?, *Academy of Management Journal* 50(3), 491–506.
Katz, J. S. (1999), *Bibliometric Indicators and the Social Sciences. Report to the UK Economic and Social Research Council,* SPRU, University of Sussex, http://www.sussex.ac.uk/Users/sylvank/pubs/ESRC.pdf.
Kaufman, G. G. (1984), Rankings of finance departments by faculty representation on editorial boards of professional journals - a note, *Journal of Finance* 39(4), 1189-1197.
Kurtz, D. L., and L. E. Boone (1988), Rating marketing faculties on the basis of editorial review board memberships, *Journal of Marketing Education* 10(Spring), 64-68.

Laband, D. N., and M. J. Piette (1994), The relative impacts of economics journals - 1970-1990, *Journal of Economic Literature* 32(2), 640-666.
Lee, F. S. (2006), The ranking game, class and scholarship in American mainstream economics, *Australasian Journal of Economics Education* 3(1/2), 1-41.
Lee, F. S. (2008), A case for ranking heterodox journals and departments, *On the Horizon* 16(4), 241-251.
Liebowitz, S. J., and J. P. Palmer (1984), Assessing the relative impacts of economics journals, *Journal of Economic Literature* 22(1), 77-88.
Lo, M., M. C. S. Wong, and F. G. Mixon (2008), Ranking economics journals, economics departments, and economists using teaching-focused research productivity, *Southern Economic Journal* 74(3), 894-906.
Luwel, M., H. F. Moed, A. J. Nederhof, V. De Samblanx, K. Verbrugghen, and L. J. van der Wurff (1999), *Towards Indicators of Research Performance in the Social Sciences and Humanities,* CWTS Leiden.
Meho, L. I. (2007), The rise and rise of citation analysis, *Physics World* 20(1), 32–36.
Meho, L. I., and Y. Rogers (2008), Citation counting, citation ranking, and h-Index of human-computer interaction researchers: a comparison of Scopus and Web of Science, *Journal of the American Society for Information Science and Technology* 59(11), 1711–1726.
Merton, R. K. (1968), The Matthew Effect in Science, *Science* 159(3810), 56-63.
Moed, H. F. (2005), *Citation analysis in research evaluation*, Dordrecht Springer.
Moed, H. F., W. J. M. Burger, J. G. Frankfort, and A. F. J. Van Raan (1985), The use of bibliometric data for the measurement of university research performance, *Research Policy* 14(3), 131-149.
Moxham, H., and J. Anderson (1992), Peer review. A view from the inside, *Science and Technology Policy* 5(1), 7-15
Nederhof, A. J., and A. F. J. van Raan (1993), A bibliometric analysis of six economics research groups: A comparison with peer review, *Research Policy* 22(4), 353-368.
Nelson, R. R. (2004), The market economy, and the scientific commons, *Research Policy* 33, 455-471.
Nightingale, P., and A. Scott (2007), Peer review and the relevance gap: ten suggestions for policy-makers, *Science and Public Policy* 34(8), 543-553.
Osterloh, M., and B. S. Frey (2008), Anreize im Wissenschaftssystem, *Working Paper, CREMA – Center for Research in Economics, Management and the Arts, Switzerland*.
Osterloh, M., and B. S. Frey (2009), Are more and better indicators the solution? Comment to William Starbuck, *Scandinavian Journal of Management* forthcoming.
Paul, K. (2004), Business and society and business ethics journals: A citation and impact analysis, *Journal of Scholarly Publishing* 35(2), 103-117.
Perry-Smith, J. E., and C. E. Shalley (2003), The social side of creativity: A static and dynamic social network perspective, *Academy of Management Review* 28(1), 89-106.
Podsakoff, P. M., S. B. Mackenzie, D. G. Bachrach, and N. P. Podsakoff (2005), The influence of management journals in the 1980s and 1990s, *Strategic Management Journal* 26(5), 473-488.
Prendergast, C. (1999), The Provision of Incentives in Firms, *Journal of Economic Literature* 37, 7-63.
Reedijk, J. (1998), Sense and nonsense of science citation analyses: comments on the monopoly position of ISI and citation inaccuracies. Risks of possible misuse and biased citation and impact data, *New Journal of Chemistry* 22(8), 767-770.

Rigby, J., and J. Edler (2005), Peering inside research networks: Some observations on the effect of the intensity of collaboration on the variability of research quality, *Research Policy* 34(6), 784-794.
Schrader, U., and T. Hennig-Thurau (2009), VHB-JOURQUAL2: Method, Results, and Implications of the German Academic Association for Business Research's Journal Ranking, *BuR - Business Research* 2(2), 180-204.
Seglen, P. O. (1994), Causal Relationship between Article Citedness and Journal Impact, *Journal of the American Society for Information Science* 45(1), 1-11.
Seglen, P. O. (1997), Why the impact factor of journals should not be used for evaluating research, *British Medical Journal* 314(7079), 498-502.
Simkin, M. V., and V. P. Roychowdhury (2005), Stochastic modeling of citation slips, *Scientometrics* 62(3), 367-384.
Simkin, M. V., and V. P. Roychowdhury (2006), Do you sincerely want to be cited? Or: read before you cite, *Significance* 12, 179-181.
Simkin, M. V., and V. P. Roychowdhury (2007), A mathematical theory of citing, *Journal of the American Society for Information Science and Technology* 58(11), 1661-1673.
Singh, G., K. Haddad, and C. W. Chow (2007), Are articles in "Top" management journals necessarily of higher quality?, *Journal of Management Inquiry* 16, 319-331.
Small, H. (1999), Visualizing science by citation mapping, *Journal of the American Society for Information Science* 50(9), 799–813.
Sombatsompop, N., T. Markpin, and N. Premkamolnetr (2004), A modified method for calculating the Impact Factors of journals in ISI Journal Citation Reports: Polymer Science Category in 1997-2001, *Scientometrics* 60(2), 217-235.
Starbuck, W. H. (2009), The constant causes of never-ending faddishness in the behavioral and social sciences, *Scandinavian Journal of Management* 25, 108-116.
The Thomson Corporation (2008), ISI Web of Knowledge Journal Citation Report: http://admin-apps.isiknowledge.com/JCR/.
van Raan, A. F. J. (2003), The use of bibliometric analysis in research performance assessment and monitoring of interdisciplinary scientific developments *Technikfolgenabschätzung* 1(12), 20-29.
Warner, J. (2000), A critical review of the application of citation studies to the Research Assessment Exercises, *Journal of Information Science* 26(6), 453–459.
Weingart, P. (2005), Impact of bibliometrics upon the science system: Inadvertent consequences?, *Scientometrics* 62(1), 117–131.
White, H. D., and K. W. McCain (1998), Visualizing a discipline: An author co-citation analysis of information science, 1972–1995, *Journal of the American Society for Information Science* 49(4), 327–355.
Wirtschaftsuniversität Wien (2008), WU-Journal-Rating: http://bach.wu-wien.ac.at/fides/res/WU_Journal_Rating_2008.pdf.

7. Tables

Table 1. Top-Journals of the management and organization research community

	I	II	III	IV	V	VI	VII
Journal	Rank/ 2007 JCR[1]	2007 JCR[1] Rank of 81 ManagementJ.	2007 JCR[1] Rank of 129 BusinessJ.	2009 HB[2] BWL	2008 Jourqual[3] wiss. Qualität	2008 Jourqual Rating[3]	Rank/ 1997-2007 Citations per Reference[4]
Academy of Management Journal	(1) 5.02	(2)	(2)	1	9.08	A+	(11) 1.27
Academy of Management Review	(2) 4.37	(3)	(3)	1	9.07	A+	(9) 1.49
Organization Science	(3) 3.13	(4)	(6)	0.7	8.90	A	(7) 2.38
Administrative Science Quarterly	(4) 2.91	(5)	(7)	1	9.48	A+	(10) 1.43
Strategic Management Journal	(5) 2.83	(6)	(8)	0.7	8.41	A	(8) 1.77
Journal of Intern. Business Studies	(6) 2.28	(10)	(12)	0.7	8.81	A	(5) 3.33
Organization Studies	(7) 2.04	(12)	(15)	0.7	7.99	B	(3) 5.30
Journal of Management	(8) 2.00	(13)	(16)	0.7	7.85	B	(6) 3.27
Journal of Organizational Behavior	(9) 1.98	(14)	(17)	0.7	7.40	B	(4) 3.41
Journal of Management Studies	(10) 1.93	(16)	(19)	0.7	7.55	B	(2) 6.19
British Journal of Management	(11) 1.53	(27)	(36)	0.5	7.28	B	(1) 8.96

Legend:
[1] Journal Citation Report (JCR) of the ISI Web of Knowledge [The Thomson Corporation (2008)]. It indicates how often an article gets cited within the first two years after publishing.
[2] Handelsblatt (HB) Ranking BWL [Handelsblatt (2009)]. Journals scores reach from 1.0 to 0.0. Higher value indicates higher journal impact. Journal scores are obtained from a combination of journal citation reports and reputation rankings.
[3] Official journal ranking of the VHB [Hennig-Thurau et al. (2004)]. Higher values indicate higher journal impact. Journal scores are obtained from survey data and intend to capture quality aspects.
[4] Self-constructed measurement: Journal Impact = ∑references per article/∑citations per article. Sample: T=1997-2007, N=5,794 authors with 5,509 articles.

Table 2. Editorial Boards according to Individual Scholars

Scholar name	Number of Editor Board Membership Positions (editor, co-editor or board member)	Number of Editor Positions (editor, co-editor)	Publication Record (Ranking Position according to Publication Record)	Corrected Research Output (Ranking Position according to Corrected Research Output)
Cannella, AA	6	0	0.97 (82)	38.35 (131)
Reuer, JJ	5	2	0.93 (93)	31.07 (213)
Floyd, SW	5	2	0.73 (213)	16.83 (792)
Inkpen, A	5	0	0.69 (488)	24.89 (381)
Hodgkinson, GP	5	0	0.69 (488)	6.2 (2463)
Lepak, D	5	1	0.44 (1188)	10.72 (1466)
Hitt, MA	4	0	1.29 (18)	49.07 (73)
Lounsbury, M	4	2	0.76 (183)	49.65 (72)
Cornelissen, JP	4	2	0.69 (488)	34.67 (160)
Kostova, T	4	0	0.64 (798)	29.24 (249)
Henisz, WJ	4	2	0.63 (809)	27.61 (302)
Ashkanasy, NM	4	2	0.63 (809)	12.79 (1205)
Foss, NJ	4	0	0.51 (1010)	17.19 (766)
Bartunek, JM	4	0	0.49 (1091)	16.48 (817)
Jarzabkowski, P	4	0	0.34 (2021)	15 (949)
Maitlis, S	3	0	0.88 (124)	73.14 (20)
George, JM	3	0	0.88 (124)	26.68 (330)
Dobrev, SD	3	0	0.76 (183)	41.76 (105)
Birkinshaw, J	3	0	0.75 (189)	22.93 (444)
Greenwood, R	3	0	0.74 (198)	30.73 (215)
Hoskisson, RE	3	2	0.74 (198)	24.1 (394)
Filatotchev, I	3	0	0.74 (198)	16.01 (868)
McNamara, GM	3	0	0.7 (219)	20.7 (539)
Shen, W	3	0	0.69 (488)	28.97 (256)
Certo, ST	3	0	0.69 (488)	19.01 (645)
Takeuchi, R	3	0	0.69 (488)	16.05 (852)
Chang, SJ	3	2	0.64 (798)	28.99 (255)
Roth, K	3	1	0.64 (798)	26.01 (356)
Brass, DJ	3	0	0.64 (798)	19.85 (582)
Bansal, P	3	0	0.63 (809)	29.49 (247)
Makino, S	3	0	0.61 (832)	16.41 (820)
Delios, A	3	2	0.61 (832)	2.36 (4180)
Balogun, J	3	0	0.59 (854)	23.53 (415)
Ethiraj, SK	3	0	0.56 (893)	30.4 (220)
George, G	3	0	0.56 (893)	21.72 (494)
Swaminathan, A	3	2	0.53 (957)	24.67 (385)
Tallman, SB	3	2	0.53 (957)	11.5 (1363)
Baker, T	3	0	0.51 (1010)	21 (524)
Anand, J	3	0	0.49 (1091)	13.75 (1089)
Jensen, M	3	0	0.47 (1119)	40.92 (111)
Sorge, A	3	1	0.47 (1119)	14.91 (956)
Durand, R	3	0	0.45 (1162)	17.78 (729)
Delbridge, R	3	0	0.44 (1188)	6.01 (2535)
Suddaby, R	3	0	0.41 (1542)	22.68 (455)
Chattopadhyay, P	3	0	0.37 (1870)	14.5 (1012)
Sparrowe, RT	3	0	0.37 (1870)	12.71 (1207)
Seidl, D	3	0	0.34 (2021)	12.62 (1216)
Robson, M	3	1	0 (5635)	0 (5387)

The table includes all persons with three or more board memberships (according to the broad definition).

Table 3. Determinants of Board and Editor Board Membership

Dependent Variable:	**Board Membership**						**Editor Board Membership**					
	Coef.	**SD**	**Sig.**	**Coef.**	**SD**	**Sig.**	**Coef.**	**SD**	**Sig.**	**Coef.**	**SD**	**Sig.**
	I			**II**			**III**			**IV**		
(Constant)	69.89	30.96	*	163.93	33.25	***	46.60	33.15		142.68	35.57	***
Publication record (lnskew0)	1.08	0.23	***	7.36	.65	***	0.92	0.25	***	7.40	0.71	***
Publication record (lnskew0)^2				-5.68	.57	***				-5.96	0.64	***
Co-authorship (lnskew0)	1.53	0.12	***	1.26	.13	***	1.58	0.13	***	1.31	0.14	***
Citations (lnskew0)	0.14	0.06	**	0.20	.06	***	0.17	0.06	**	0.23	0.06	***
Pages (lnskew0)	0.38	0.11	***	0.37	.11	***	0.36	0.11	***	0.33	0.12	**
Journal Impact	0.18	0.04	***	0.15	.04	***	0.21	0.04	***	0.17	0.04	***
Entry Year	-0.04	0.02	*	-0.08	.02	***	-0.03	0.02		-0.07	0.02	***
Pseudo R^2		.192			.216			.174			.196	
Log likelihood		-2513.74			-2439.20			-2360.36			-2295.21	
LR-Chi^2		1397.09	***		1346.17	***		991.72	***		1122.02	***
Model Improvement LR Chi^2 by including Publication record (lnskew0)		20.85	***					12.93	***			
Model Improvement LR Chi^2 by including Publication record (lnskew0)^2					149.08	***					130.30	***
N		5,794			5,794			5,794			5,794	
	V			**VI**			**VII**			**VIII**		
(Constant)	362.20	19.13	***	359.64	19.16	***	376.59	18.08	***	373.73	18.10	***
Corrected Research Output (lnskew0)	.91	.03	***	1.17	.13	***	.93	.03	***	1.25	.13	***
Corrected Research Output (lnskew0)^2				-.06	.03	*				-.07	.03	**
Citations (lnskew0)	-.01	.01		-.01	.01		-.01	.01		-.01	.01	
Entry Year	-.18	.01	***	-.18	.01	***	-.19	.01	***	-.19	.01	***
Pseudo R^2		.158			.158			.173			.174	
Log likelihood		-2406.28			-2403.91			-2575.53			-2571.83	
LR-Chi^2		899.88	***		904.61	***		1073.52	***		1080.92	***
Model Improvement LR Chi^2 by including Publication record (lnskew0)		746.49	***					876.68	***			
Model Improvement LR Chi^2 by including Publication record (lnskew0)^2					4.73	*					7.40	**
N		5,794			5,794			5,794			5,794	

Legend: Possion Regression, † $p < 0.10$, *$p < 0.05$, **$p < 0.01$, *** $p < 0.001$

lnskew0 indicates the zero-skewness logarithm of a variables, i.e. the variable is added with the constant "1" so that the logarithm can be also taken from values of "0"

8. Figures

Figure 1. Ranking Comparison of Individual Scholars according to Editorial Board Membership and Publication Record

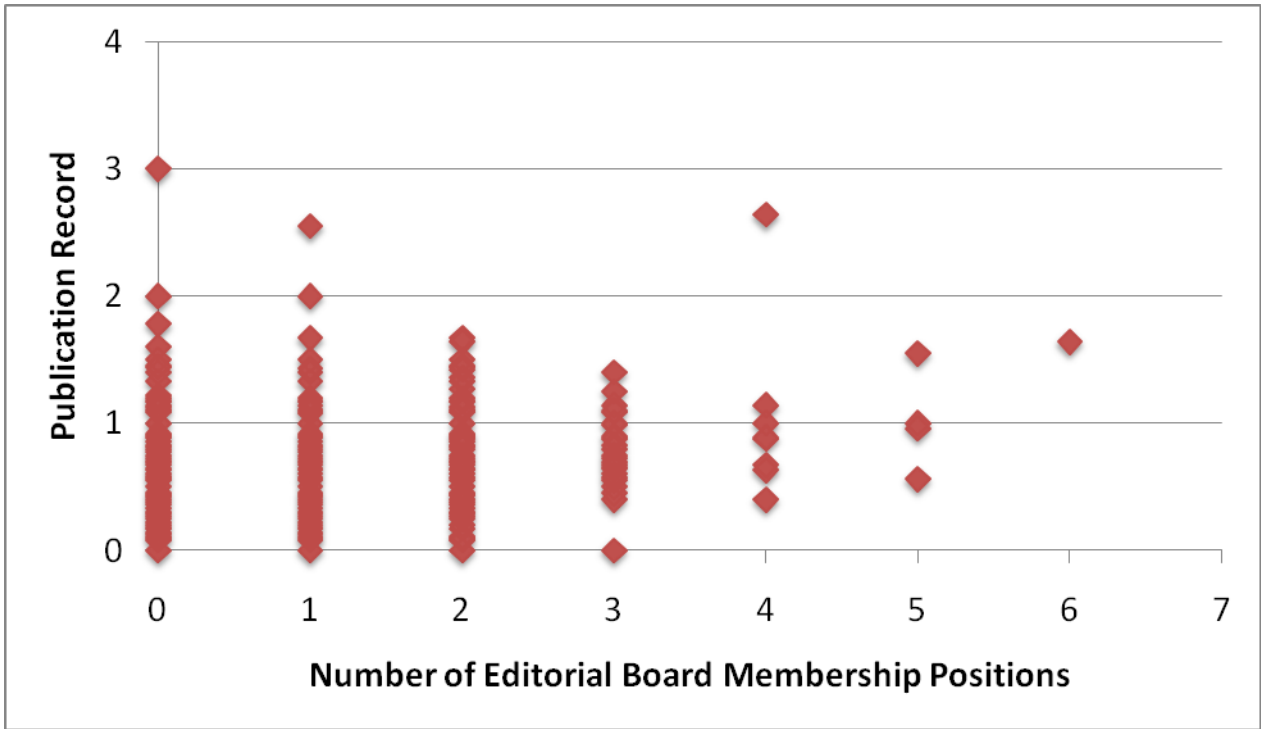

Figure 2. Predicted Relationship between Publication Record and Board Membership